

SLURRY HYDROCARBON SYNTHESIS WITH LIQUID HYDROISOMERIZATION IN THE SYNTHESIS REACTOR

Abstract of the Disclosure

5

A slurry Fischer-Tropsch hydrocarbon synthesis process for synthesizing liquid hydrocarbons from synthesis gas in a synthesis reactor also hydroisomerizes the synthesized hydrocarbon liquid, which comprises the slurry liquid, in one or more lift reactors immersed in the slurry body in the synthesis reactor. A monolithic catalyst is preferably used for the hydroisomerization, and slurry circulation up through the lift reactors from the surrounding slurry body, is achieved at least in part by the lift action of the hydroisomerization treat gas. Preferably, catalyst particles are also removed before the slurry contacts the catalyst. Hydroisomerization occurs while the synthesis reactor is producing hydrocarbons, without interfering with the synthesis reaction. A gas bubble reducing downcomer may be used to produce and feed the gas bubble reduced slurry into the lift reactor, thereby providing a hydraulic head assist in the slurry circulation up through and out of the lift reactor.